Patent Claims

1. A tilting system for an observation device, in particular for a microscope, with at least one objective device and at least one optical device for passing at least one beam path from an entrance region to an exit region of the tilting system, wherein the optical device has at least one optical element in the form of a prism for tilting and for image reversion of the beam path as well as for guiding it further into at least one ocular device, is hereby characterized in that an optical element in the form of a 180° prism is provided for image reversion in the beam path and that the 180° prism is arranged crosswise to the extended position of the tilting system.

2. The tilting system according to claim 1, further characterized in that at least one deviating prism is provided in each of the beam paths, upstream and/or downstream of the 180° prism, as viewed from the entrance region of the tilting system.

3. The tilting system according to claim 2, further characterized in that the at least one deviating prism is formed as a 90° prism or a 90° mirror.

4. The tilting system according to claim 2, further characterized in that two axes of rotation are provided running perpendicular to the direction of the beam entering into the tilting system in its entrance region, around which the 180° prism and the deviating prisms are moved relative to one another.

5. The tilting system according to claim 4, further characterized in that the system is formed for the passage of two beam paths, whereby in each beam path at least one objective device and at least one optical device are provided and whereby a device for adjusting the distance between the two beam paths is provided in the exit region of the tilting system.

6. The tilting system according to claim 5, further characterized in that the device for adjusting the distance is formed as a lens system and that a lens system is provided in each beam path.

7. The tilting system according to claim 6, further characterized in that the lens system is provided in at least one axis of rotation, around which the 180° prism and the deviating prisms are moved relative to one another.

8. The tilting system according to claim 5, further characterized in that at least one rhombic prism that can rotate around an axis of rotation is provided in the beam path upstream of the exit region of the tilting system.

9. The tilting system according to claim 1, further characterized in that the objective device has at least one positive objective element and at least one negative objective element.

10. The tilting system according to claim 9, further characterized in that the positive objective element is provided in the entrance region of the beam path into the tilting system.

11. The tilting system according to claim 9, further characterized in that the negative objective element is provided in the beam path, downstream of the 180° prism, as viewed from the entrance region of the tilting system.

12. The tilting system according to claim 11, further characterized in that the negative objective element is provided in the beam path, between the 180° prism and the following deviating prism.

13. The tilting system according to claim 11, further characterized in that the negative objective element is provided in the beam path, between the deviating prism following the 180° prism and the rhombic prism.

14. A tilting system for an observation device, in particular for a microscope, with at least one objective device and at least one optical device for passing at least one beam path from an entrance region to an exit region of the tilting system, wherein the optical device has at least one optical element in the form of a prism for tilting and for image reversion of the beam path as well as for guiding it further into at least one ocular device, is hereby characterized in that at least one optical element in the form of a 180° prism is provided, which the beam passes through after it has entered the tilting system, and by which the beam is guided back in the direction of the entrance region and the at least one prism is provided for image reversion.

15. The tilting system according to claim 14, further characterized in that the at least one prism for image reversion in the beam path, is arranged downstream of the 180° prism, as viewed from the entrance region of the tilting system.

16. The tilting system according to claim 14, further characterized in that the at least one prism for image reversion is formed as a poro prism of the second type.

17. The tilting system according to claim 15, further characterized in that two prisms for image reversion are provided in the beam path.

18. The tilting system according to claim 14, further characterized in that at least one deviating prism is provided in the beam path between the 180° prism and the at least one prism for image reversion.

19. The tilting system according to claim 18, further characterized in that two deviating prisms are provided.

20. The tilting system according to claim 19, further characterized in that in order to avoid image rotations, two or more prisms are arranged simultaneously in a movable manner around axes of rotation.

21. The tilting system according to claim 20, further characterized in that two axes of rotation run through the 180° prism, wherein one axis of rotation is provided in the optical entrance beam and wherein one axis of rotation is provided in the optical exit beam of the 180° prism.

22. The tilting system according to claim 20, further characterized in that the two deviating prisms are arranged around an axis of rotation so that they can move relative to one another.

23. The tilting system according to claim 14, further characterized in that the system is formed for the passage of two beam paths, whereby in each beam path at least one objective device and at least one optical device are provided and whereby a device for adjusting the distance between the two beam paths is provided in the exit region of the tilting system.

24. The tilting system according to claim 23, further characterized in that for adjusting the distance between the two beam paths, the at least one prism for image reversion for each beam path can be arranged so that it can rotate around one axis of rotation.

25. The tilting system according to claim 14, further characterized in that the objective device is provided in beam path upstream of the 180° prism.

26. A tilting system for an observation device, in particular for a microscope, with at least one objective device and at least one optical device for passing at least one beam path from an entrance region to an exit region of the tilting system, wherein the optical device has at least one optical element in the form of a prism for tilting and for image reversion of the beam path as well as for guiding it further in at least one ocular device, is hereby characterized in that the optical elements necessary for the swinging are arranged in an axis of rotation and the at least one prism is provided for image reversion.

27. The tilting system according to claim 26, further characterized in that the at least one prism for image reversion is formed as a Schmidt-Pechan prism.

28. The tilting system according to claim 26, further characterized in that the at least one prism for image reversion is arranged in beam path downstream of the optical elements necessary for swinging.

29. The tilting system according to claim 26, further characterized in that the prism for image reversion is arranged so that it can rotate around an axis of rotation.

30. The tilting system according to claim 26, further characterized in that at least one deviating prism, and, in particular, two deviating prisms is/are provided in beam path for the swinging.

31. The tilting system according to claim 30, further characterized in that at least one deviating prism is formed as a 90° prism.

32. The tilting system according to claim 30, further characterized in that at least one deviating prism is formed as a 90° deviating prism.

33. The tilting system according to claim 26, further characterized in that the at least one prism for image reversion and the optical elements necessary for swinging are arranged in one and the same axis of rotation.

34. The tilting system according to claim 30, further characterized in that two deviating prisms are provided in each beam path and that the at least one prism for image reversion is provided in beam path between two deviating prisms.

35. The tilting system according to claim 30, further characterized in that two deviating prisms are provided for each beam path, that one deviating prism is formed as a 90° prism and one deviating prism is formed as a 90° ridge prism and that the 90° prism is provided in beam path, upstream of the 90° ridge prism, as viewed from the entrance region of the tilting system.

36. The tilting system according to claim 30, further characterized in that two deviating prisms are provided for each beam path, that one deviating prism is formed as a 90° prism and one deviating prism is formed as a 90° ridge prism and that the 90° ridge prism is provided in beam path, upstream of the 90° prism, as viewed from the entrance region of the tilting system.

37. The tilting system according to claim 20, further characterized in that this system is formed for the passage of two beam paths, whereby in each beam path at least one objective device and at least one optical device are provided and whereby a device for adjusting the distance between the two beam paths is provided in the exit region of the tilting system.

38. The tilting system according to claim 37, further characterized in that the device for adjusting the distance has at least one rhombic prism for each beam path.

39. The tilting system according to claim 30, further characterized in that the objective device in beam path is provided upstream or downstream of the first deviating prism, as viewed from the entrance region of the tilting system.

40. The tilting system according to claim 37, further characterized in that the objective device has at least one positive objective element and at least one negative objective element, that the positive objective element in beam path is provided upstream or downstream of the first deviating prism, as viewed from the entrance region of the tilting system, and that the negative objective element is provided in the beam path, upstream of the device for adjusting the distance between the two beam paths, as viewed from the entrance region of the tilting system.

41. The tilting system according to claim 1, further characterized in that this system is formed for the passage of two beam paths, wherein an objective device and at least one optical device are provided in each beam path.

42. The tilting system according to claim 1, further characterized in that the ocular device is a component of the tilting system.

43. The tilting system according to claim 1, further characterized in that this system is formed as a 180° tilting system.

44. The tilting system according to claim 1, further characterized in that this system has an interface for fastening to an observation device.

45. An observation device, in particular a microscope or telescope, with a base body and a tilting system according to one of claims 1 to 44.